IN THE CLAIMS

Please amend the claims to read as indicated herein.

1. (currently amended) A method of determination of an optical property of an optical device under test comprising:

splitting an incoming light beam into a first initial light beam and a second initial light beam;

splitting said first initial light beam into a first light beam and a second light beam;

coupling the first light beam into the optical device under test;

letting the second light beam travel a different path from the first light beam;

superimposing the first and the second light beam to produce interference between the first light beam and the second light beam in a resulting first superimposed light beam;

detecting the power of the first superimposed light beam for deriving a first signal over time containing information about the optical property of the device under test when tuning a frequency of the incoming light beam over a given frequency range;

splitting the second initial light beam into a ~~fifth~~ third light beam and a ~~sixth~~ fourth light beam;

superimposing the ~~fifth~~ third and the ~~sixth~~ fourth light beam after the ~~fifth~~ third and ~~sixth~~ fourth light beams have traveled a different path, to produce interference between the ~~fifth~~ third and the ~~sixth~~ fourth light beam in a resulting second superimposed light beam;

detecting the power of the resulting second superimposed light beam for deriving a second signal over time containing information about a time dependence of a frequency when tuning a frequency of the incoming light over a given frequency range;

compensating a time-delay between the first and the second signal; and

deriving a frequency dependency of the first signal for deriving the optical property of the optical device under test.

2. (previously presented) The method of claim 1, further comprising:

deriving elements of a Jones matrix for the optical device under test from the

compensated frequency dependence of the detected powers.

3. (previously presented) The method of claim 1, further comprising at least one of:

using a first light beam with defined polarization, detecting the power of the

resulting first superimposed light beam as a function of frequency and

polarization, and deriving a polarization mode dispersion of the device under

test from the information obtained through the measurement, preferably

represented as Jones matrix elements of the device under test;

deriving a chromatic dispersion of the device under test from the Jones matrix

elements of the device under test;

using said first light beam with defined polarization, detecting the power of the

resulting first superimposed light beam as a function of frequency and

polarization, and deriving the principal states of polarization of the device

under test from the Jones matrix elements of the device under test;

using said first light beam with defined polarization, detecting the power of the

resulting first superimposed light beam as a function of frequency and

polarization, and deriving the polarization dependent loss of the device under

test from the Jones matrix elements of the device under test;

using said first light beam with defined polarization, detecting the power of the

resulting first superimposed light beam as a function of frequency and

polarization, and deriving the fast and slow group delays, associated with the

fast and slow principal states of polarization of the device under test from the

Jones matrix elements of the device under test;

deriving the insertion loss of the device under test from the Jones matrix elements

of the device under test;

deriving a transmissivity of reflectivity of the device under test from the Jones

matrix elements of the device under test; and

using a first light beam with defined polarization, detecting the power of the

resulting first superimposed light beam as a function of optical frequency and

polarization, and deriving higher-order polarization mode dispersion

parameters from the Jones matrix elements of the device under test.

4. (currently amended) The method of claim 1, further comprising:

choosing the time-delay to be ~~½ (τ₂-τ₁)+τ_d~~ $\frac{1}{2} (\tau_2-\tau_1)+\tau_d$,

τ_2 being the delay of the ~~sixth~~ fourth light beam relative to the ~~fifth~~ third light

beam, τ_1 being the delay of the first light beam relative to the second light

beam, $(\tau_2 - \tau_1)$ being an internal delay, and τ_d being an external delay.

5. (currently amended) A software program or product for executing a method
when run on a data processing system, said method comprising:

splitting an incoming light beam into a first initial light beam and a second initial

light beam;

splitting said first initial light beam into a first light beam and a second light beam;

coupling the first light beam into the optical device under test;

letting the second light beam travel a different path from the first light beam;

superimposing the first and the second light beam to produce interference between

the first light beam and the second light beam in a resulting first

superimposed light beam;

detecting the power of the first superimposed light beam for deriving a first signal

over time containing information about the optical property of the device

under test when tuning a frequency of the incoming light beam over a given

frequency range;

splitting the second initial light beam into a ~~fifth~~ third light beam and a ~~sixth~~ fourth

light beam;

superimposing the ~~fifth~~ third and the ~~sixth~~ fourth light beam after the ~~fifth~~ third and

~~sixth~~ fourth light beams have traveled a different path, to produce interference

between the ~~fifth~~ third and the ~~sixth~~ fourth light beam in a resulting second

superimposed light beam;

detecting the power of the resulting second superimposed light beam for deriving a

second signal over time containing information about a time dependence of a

frequency when tuning a frequency of the incoming light over a given

frequency range;

compensating a time-delay between the first and the second signal; and

deriving a frequency dependency of the first signal for deriving the optical property

of the optical device under test.

6. (currently amended) An apparatus for determination of a property of an optical
device under test comprising:

a ~~first~~ beam splitter in the path of the incoming light beam for splitting the

incoming light beam into a first initial light beam traveling a first initial path

and a second initial light beam traveling a second initial path;

a ~~second~~ beam splitter in the path of the first initial light beam for splitting the first

initial light beam into a first light beam traveling a first path and a second

light beam traveling a second path, wherein the optical device under test can

be coupled in said first path for coupling in the first light beam;

a ~~third beam splitter~~ recombiner in said first and in said second path for

superimposing the first and the second light beam after the second light beam

has traveled a different path as the first light beam to produce interference

between the first light beam and the second light beam in a resulting first

superimposed light beam traveling a first resulting path;

a first power detector in said first resulting path for detecting the power of the

resulting first superimposed light beam traveling the first resulting path as a

function of frequency when tuning the frequency of the incoming light beam

over a given frequency range;

a ~~fourth~~ beam splitter in said second initial path for splitting the second initial light

beam in a ~~fifth~~ third light beam traveling a ~~fifth~~ third path and a ~~sixth~~ fourth

light beam traveling a ~~sixth~~ fourth path;

a ~~fifth beam splitter~~ recombiner in said ~~fifth~~ third and said ~~sixth~~ fourth path for

superimposing the ~~fifth~~ third and the ~~sixth~~ fourth light beam after said ~~fifth~~

third and sixth fourth light beam have traveled a different path, to produce

interference between the fifth third and the sixth fourth light beam in a

resulting second superimposed light beam traveling a second resulting path;

and

a second power detector in said second resulting path for detecting the power of the

resulting second superimposed light beam as a function of frequency when

tuning the frequency of the incoming light beam over a given frequency

range;range,

wherein said first and second power detectors have an output whereby an output of

the power detector is connected with an evaluation unit for:

detecting a time dependence in a tuning gradient of the frequency when

tuning the frequency of the incoming light beam over the given

frequency range,

using a time-delay for compensating an external and/or an internal time-

delay, and

deriving the an optical property of the optical device under test from the

compensated optical frequency dependencies of the detected powers.

7. (previously presented) A method of determination of an optical property of an

optical device under test comprising:

tuning an optical frequency λ of an optical beam;

deriving a dependency of the optical frequency λ of the optical beam over a first

time period t;

deriving a dependency of the optical property of the device under test over a second

time period $t+\Delta t$;

synchronizing the time dependency of the optical frequency λ of the optical beam

with a time dependency of the optical property of the device under test; and

deriving the frequency dependency of the optical property of the device under test

from the synchronized time dependencies.

8. (previously presented) The method of claim 7, wherein deriving a dependency of the optical frequency λ and deriving a dependency of the optical property of the device under test are performed with the use of at least one interferometer.

9. (previously presented) The method of claim 7, wherein synchronizing the time dependency of the optical frequency λ of the optical beam with a time dependency of the optical property of the device under test is performed by using a time-delay to synchronize the time dependency of the optical frequency λ of the optical beam with the time dependency of the optical property of the device under test.

10. (previously presented) The method of claim 7, wherein the synchronization is dynamic or static.

11. (currently amended) A method of determination of an optical property of an optical device under test comprising:
  tuning a frequency of an incoming light beam over a given frequency range;
  splitting the incoming light beam into a first initial light beam and a second initial light beam;
  splitting said first initial light beam into a first light beam and a second light beam;
  coupling the first light beam into the optical device under test;
  letting the second light beam travel a different path from the first light beam;
  superimposing the first and the second light beam to produce interference between the first light beam and the second light beam in a resulting first superimposed light beam;
  detecting the power of the first superimposed light beam for deriving a first signal over time containing information about the optical property of the device under test;
  splitting the second initial light beam in a fifth into a third light beam and a sixth fourth light beam;
  superimposing the fifth third and the sixth fourth light beam after said fifth third and sixth fourth light beams have traveled a different path, to produce

interference between the ~~fifth~~ third and the ~~sixth~~ fourth light beam in a
resulting second superimposed light beam;

detecting the power of the resulting second superimposed light beam for deriving a
second signal over time containing information about the time dependence of
the frequency;

compensating a time-delay between the first and the second signal; and

deriving a frequency dependency of the first signal for deriving the optical property
of the optical device under test.

12. (previously presented) The method of claim 3, wherein the higher-order
polarization mode dispersion parameters include the rate of change of the differential
group delay with frequency.

13. (previously presented) The method of claim 5, wherein the software program or
product is stored on a data carrier.

14. (previously presented) The apparatus of claim 6, wherein the optical device
under test is a heterodyne optical network analyzer.